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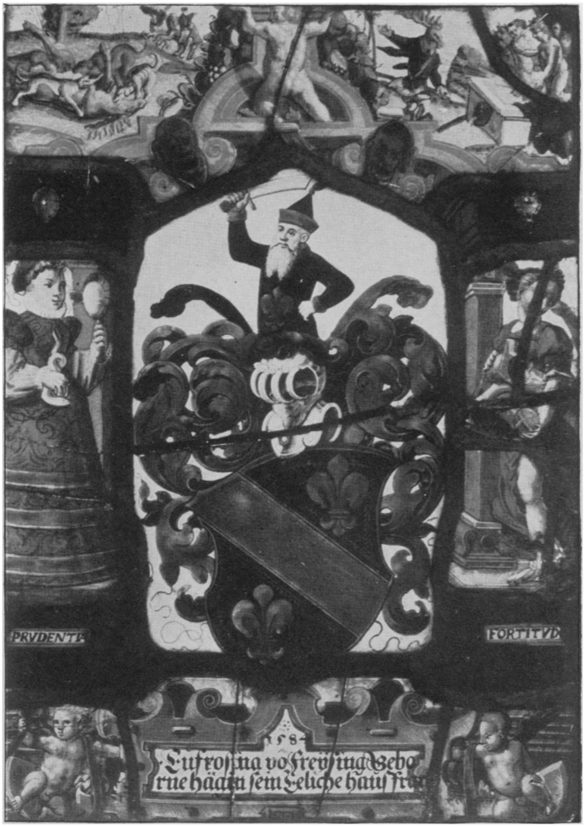
BULLETIN
OF
THE PENNSYLVANIA MUSEUM

July, 1907 FIFTH YEAR Number 19

STAINED GLASS (First Part)



SWISS DOMESTIC GLASS, 1584
One of a Pair
Inscription: EUFROSINA VO(N) FREYSING GEBORNE HÄGIN
SEIN SELICHE HAUSFRAU
(Eufrosina Freysing, born Hagin, his happy wife)

The Museum has recently become the recipient of some thirty-seven pieces of stained glass, mostly of Swiss origin, forming a collection quite unique in this country. The specimens are all of them good, while some are exceptionally fine. It is impossible to obtain such glass to-day; the supply of this domestic glass (so-called because used to decorate the windows in the homes of wealthy burghers or the halls they held council in) was never large, and now all the pieces of value are permanently held in a few of the great museums or other collections.

The Pennsylvania Museum is indebted to the generosity of Miss Mary Lewis for this valuable accession; it was gathered together by her brother, the late Dr. Francis W. Lewis, one of our former trustees, who, beside his profound knowledge of the sciences germane to his profession, was gifted with a true art sense and culture, as well as with the instincts of a collector. The collection was picked up piece by piece, some thirty or more years ago, the finest specimens in Switzerland, from the well-known collection of Dr. Ferdinand Keller, in Zürich.

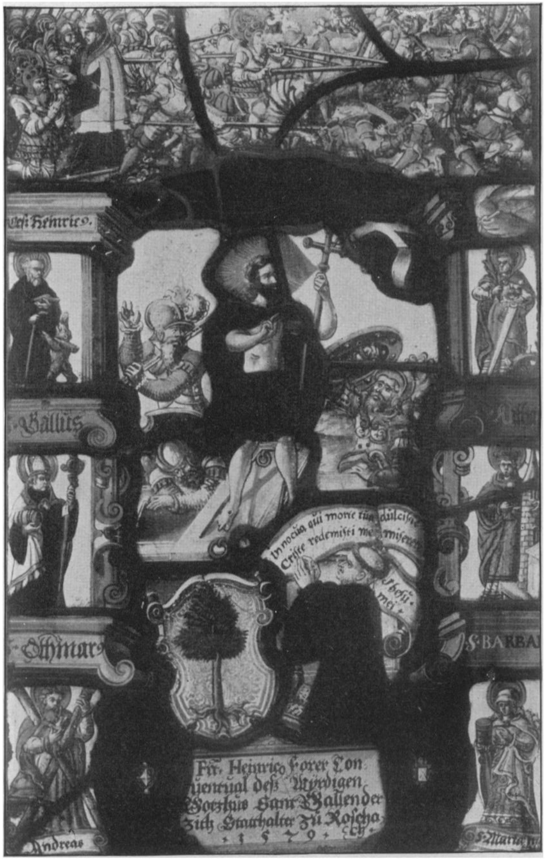
Before speaking of Swiss glass in particular, a few words on stained glass windows in general may not be unwelcome to those who are not perfectly familiar with the mysteries of the art.

White glass of extreme purity would seem to have been known to the Chinese as long ago as 2300 B. C., and to the Egyptians one, or possibly two, thousand years earlier. Stained glass windows were used by the Romans. The Arabs decorated their mosques and palaces with a crude sort of latticework made of plaster, which, if large, was strengthened with ribs of iron or rushes. The pattern was scooped out of the half dry plaster and colored glass inserted near the outer side. Such windows (?) are still common in Cairo, though no doubt the idea is a very ancient one. The Venetians may have brought the pattern to Europe, improving it greatly by substituting lead for plaster, as the Romans had done centuries earlier. It is probable that the Venetians carried the art to France in the X. century. Yet it is possible that the art was known in France as early as the reign of Charlemagne (d. 815). The very early glass in England, of which rare vestiges are to be found, is of French manufacture ("Windows." Lewis F. Day).

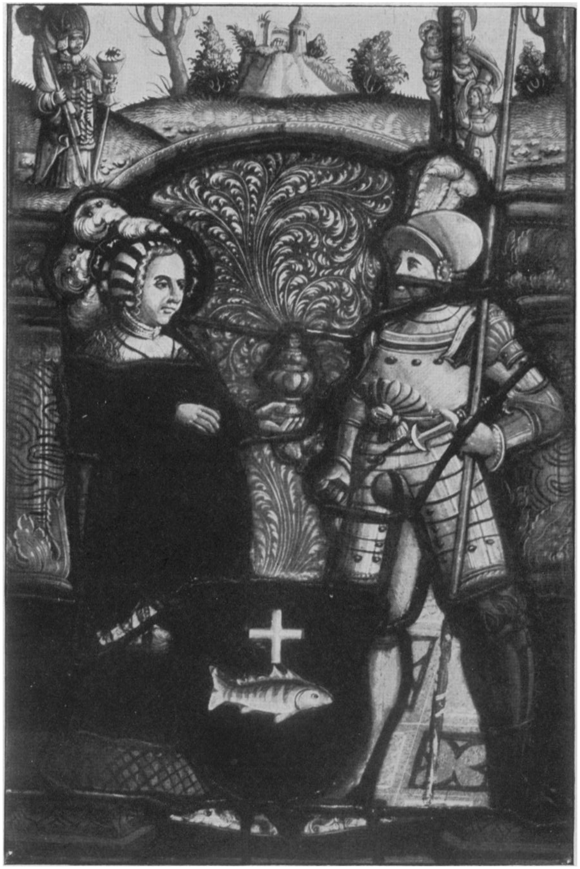
There lived, probably toward the end of the XI. or the beginning of the XII. century, a German (?) priest and monk named Theophilus, about whom we know nothing. He has, however, left us a voluminous work, the *Diversarum Artium Schedula,* in which he gives an account of many arts, among them stained glass (Book II., 31 chapters on glass windows and vases). Contrary to the common belief, Theophilus gives us a full account of *oil* painting, proving that Jan Van Eyck (1390-1441), to whom the invention of oil painting is usually ascribed, could only have invented drying oil, if that.

A few technical terms: "White glass" is uncolored glass. "Pot metal" is glass colored throughout. "Flashed," or "coated," glass is colored on one surface only. "Grisaille" is in the main formed of white glass, but this was not the *clear* glass we know. It had a green, yellow or dusky tint, due to the impurity of the sand used, which gave a mellowness to it; beside which there was a slight opacity due to the imperfect manufacture, all of which added greatly to the softness and beauty of this style. The design in the earliest windows is outlined by the leading; later (XIII. century, possibly in the XII.) it is supplemented by painting, in outline only, simple figures, foliage, or arabesques, brought out by a cross-hatched background. Gradually color began to be introduced into grisaille windows, a soft yellow or other delicately colored "quarry" or panel, inserted just where it was needed. The square or diamond-shaped panels of glass are called "quarries," from the French word *carré,* square.

The best known grisaille windows are the "Five Sisters" in York Minster,—a group of five long, lancet windows, full of *color.* The legend tells


Heinric9.
S. Gallus
S. Othmar
S. BARBA
Andreas
S. Maria
In nocua qui morte tua dulcissime Criste redemisti me miserere mei Jhesu.
Fr. Heinrico Forer Con ventual deß Wyrdigen Gotzhus Sant Gallen der zith Statthalter zu Roscha
1579

SWISS DOMESTIC HERALDIC GLASS, 1579
Christ Rising from the Tomb
A Monk of St. Gall interceding for the Donor,
who is represented in the upper left-hand Corner, receiving
the Sacrament before going into Battle



(Neither name nor date—Probably about 1600)
A WARRIOR AND HIS WIFE
Arms, a Fish naiant, with the Swiss Cross above. Observe the
exceptionally fine diaper Background

us how in the reign of King Henry IV. (d. 1413), five maiden ladies worked the design in embroidery, which they sent abroad to be copied in glass; all of which is picturesque and ought to be believed; but along comes that great authority, Day, who knows everything about glass, and tells us that the windows belong to the preceding century and, ungallant Day, they show the strong work of a man and a practical glazier,—not the delicacy of five charming spinsters.

Stained glass is pre-eminently a color art, an art almost exclusively ecclesiastical. A window is formed of bits of colored glass which "are cut into the shapes of faces, or figures, or robes, or canopies, or whatever you want and whatever the subject demands; then features are painted on the faces, folds on the robes, and so forth—not with color, but merely with brown shading; then, when this shading has been burnt into the glass in a kiln, the pieces are put together into a picture by means of grooved strips of lead, into which they fit" ("Stained Glass Work." C. W. Whall, p. 30).

The "paint," spoken of above, consists of a brown pigment ground up with powdered soft glass (or equivalent silicate) which, when the glass is "fired," fuses and becomes part and parcel of it. The powder is first mixed with gum so that it can be painted on the glass with an ordinary brush. This *paint* is practically opaque, and must not be confused with the stain and enamels of later centuries. In the rare cases where it is used thin it became a muddy, brown smear. No other paint was known to the early glazier-artist.

Roughly speaking, the ancient glazier worked as follows,—and the changes since his time are in details only. The full-sized colored cartoon of the window was drawn, spread out upon, and attached to a table. The necessary lead-lines were then added, a task requiring much experience and skill. The pattern may now be regarded as a mosaic, more like a "Florentine mosaic," or even like one of the jointed maps we saw in childhood. The artist then placed a sheet, say of ruby glass, over a corresponding part of the design. With a pointed iron instrument, heated as much as possible, he traced upon this little glass section of the mosaic the outlines underneath. The glass broke very nearly where the heat was applied, and was further shaped by clipping away the edges with a notched instrument called a "grozing iron," and so on, until all the pieces were shaped. Today the diamond and the cutting wheel have replaced the heated iron.

The pieces were next put together upon a large plate of clear glass, a space of about one-sixteenth of an inch having been allowed around each for the core of the lead. At each intersection of the lines between the pieces a drop of beeswax was allowed to fall; this attached the "color-scheme" to the clear glass and enabled it to be placed upright on an easel for painting. This last finished, the various pieces were fired, and when a satisfactory result had been obtained, they were again assembled, this time upon the table-top for "leading." The leads were shaped like the letter "H," the horizontal line representing the *core*, the vertical lines the *flanges*. The intersections of the leads were then soldered, the spaces between lead and glass cemented, copper wires soldered on at convenient intervals to attach the glass mosaic to the iron saddle-bars let into the stonework,—and the window was finished.

A word more before we take up our specific subject. Very little glass antedates the XIII. century, although the Germans claim some at Augsburg of the XI. century. The different styles are, by Winston, a great English authority, divided thus:—Early Gothic, to about 1280. Decorated Gothic, to 1380. Perpendicular Gothic, to 1530.

CHARLES E. DANA.

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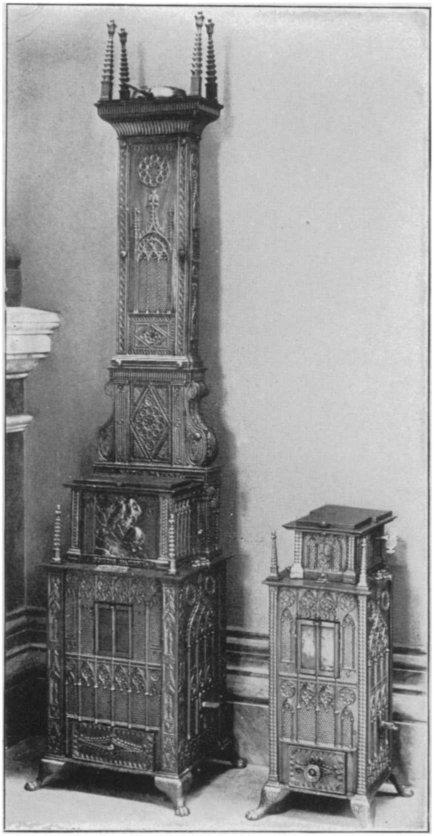
OLD AMERICAN STOVES

Through the generosity of Messrs. J. Kisterbock & Son, of Philadelphia, two Nott stoves have recently been added to the Museum collection, which are interesting as types of early American experiments in stove-making. Very little had been accomplished toward the proper heating of houses until recent times, fireplaces and stoves being the only aids to comfort, and these curious specimens were the result of experiments made by Dr. Eliphalet Nott. He was interested in the use of materials of combustion, spent many years and much money in investigations, and finally succeeded in almost perfecting the essentials of the base-burning stove.

A glance at the personality of Dr. Nott is quite worth while. Being born in the last years of the eighteenth century (1773), he belonged to that group of men who were pioneers of American life,—men who achieved through difficulties, with practically no resources at their command. He came of humble but intelligent parents, living in Connecticut; had perhaps more than the usual education of the boys of that period, and was an ordained minister at twenty-two. First a missionary in the New York wilderness, his fame as a preacher spread rapidly, and at the early age of thirty-one, he was called to the presidency of Union College, Schenectady. Here he remained as President for sixty-two years, doing much for the advancement of education in New York, as well as for the youth of his day who were fortunate enough to come in contact with his forceful personality. He



"CATHEDRAL" STOVES
Invented by Dr. Eliphalet Nott
Made in New York about 1820